Using Aspen HYSYS® Simulation to Develop Rigorous OTS for Operators Skills Enhancement

Tainá Hita (Braskem) , Marc Massó and Daniel Martinez (Inprocess)

Overview

Chlorine Processing System Startup

- Restart a chlorine processing system after an inactive period.
- Require careful planning and execution to ensure safety and efficiency.

Development of an Operator Training System (OTS)

- Identify the need to enhance the operators' skills.
- Develop an Operator Training System (OTS).
- Provide a virtual environment for operators to train and gain experience without risking safety or production.

Direct Connect with Yokogawa Centum VP DCS & ProSafe RS SIS

- Ensure that the simulated plant operation is directly connected to the actual control system providing the same training environment for operators as real life.

Challenges

Complexity of Plant Process

- Chlorine plants involve intricate and non-standard processes such as sulfuric acid handling in the drying section.
- Accurately modeling these processes in Aspen HYSYS Dynamics requires expertise in both chemical processes and software capabilities.

Integration with existing Yokogawa Centum VP DCS & ProSafe RS SIS

- Accurately replicate the detailed sequences and controls found in the actual operational environment.
- Capture interactions with upstream and downstream units to accurately mirror the functionalities of the existing Distributed Control System (DCS).

Ensuring Ownership and Maintenance of the OTS

- Timely and comprehensive training of Braskem personnel is critical for effective OTS deployment.
- Continual updates to the OTS tool post-deployment to maintain its relevance and efficacy.
- Streamlined processes for integrating plant modifications required for keeping OTS alignment with real plant.

OTS improved operator proficiency, certification and confidence by enabling practice of routine and emergency maneuvers, reducing response times and leading to alleviate anxiety during panel operation.

Solution

Using Aspen HYSYS Dynamics™ as leading process simulation software

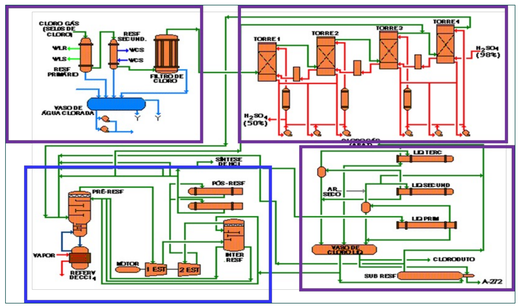
- Leverage a unique set of software features and capabilities to enable the emulation of a wide range of operating conditions and systems.
- Ensure an accurate representation of complex units within the simulation.
- Employ flexible solutions, such as utilizing Aspen HYSYS' operating blocks and extensions, to represent non-standard equipment effectively.

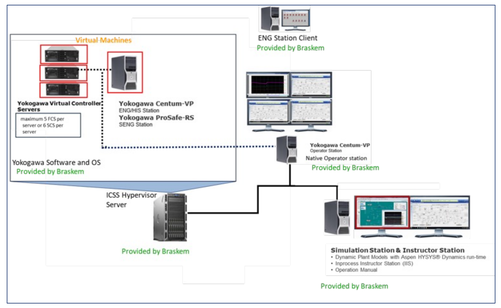
Customization of OTS features

- Develop non-standard blocks or required inputs outside the predefined scope on an ad-hoc basis.
- Design malfunctions and scenarios to provide instructors with the necessary tools to effectively conduct training sessions.

Phased delivery approach of the OTS

- Demonstrate flexibility by employing a split approach to accommodate Braskem's requirements.
- Prioritize the development and delivery of the Compression section OTS to facilitate the initiation of the training process at the earliest opportunity.
- Use a systematic approach to track and document plant modifications, ensuring all changes are promptly identified and documented.





Products

Aspen HYSYS Dynamics

Benefits

Optimization Plant Performance and Safety Through Qualified Operator Training

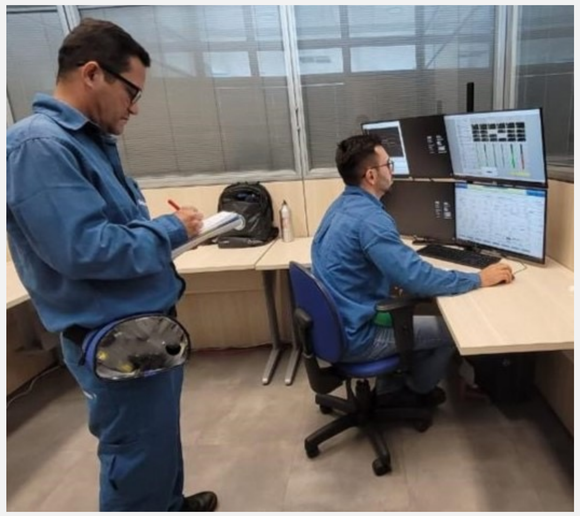
- The implementation of the OTS reduced roughly **20%** the operator training time & facilitated the creation of a certification program to ensure operators receive training and improve their readiness for real-world scenarios.
- Operators who are trained in handling emergencies and uncommon scenarios using the OTS improve safety and reduce risks.
- This translates into, improved response times and reduced incidents during actual plant operations, benefiting overall operational safety and efficiency.

Knowledge transfer and Ownership

- Enhanced project involvement and Aspen HYSYS Dynamics training for Braskem personnel.
- Increased knowledge transfer, ownership, and proactive contribution by operators and engineers, leading to improved plant performance and resilience.

Operational Excellence

- Improved productivity and minimized downtime result from the iterative testing and optimization capabilities of the OTS.
- Operational inefficiencies stemming from control philosophy errors are identified and addressed, improving the chlorine plant's performance.



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